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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/646,134	08/22/2003	Tapantosh Chakrabarty	2001.057	8890
7590	09/27/2006		EXAMINER	
EXXONMOBIL UPSTREAM RESEARCH COMPANY P.O. Box 2189 Houston, TX 77252-2189			SINGH, PREM C	
			ART UNIT	PAPER NUMBER
			1764	

DATE MAILED: 09/27/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/646,134	CHAKRABARTY ET AL.	
	Examiner Prem C. Singh	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) Responsive to communication(s) filed on 10 August 2006.
- 2a) This action is FINAL. 2b) This action is non-final.
- 3) Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) Claim(s) 1-5 and 7-17 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) Claim(s) _____ is/are allowed.
- 6) Claim(s) 1-5 and 7-17 is/are rejected.
- 7) Claim(s) _____ is/are objected to.
- 8) Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) The specification is objected to by the Examiner.
- 10) The drawing(s) filed on 22 August 2003 is/are: a) accepted or b) objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) All b) Some * c) None of:
 1. Certified copies of the priority documents have been received.
 2. Certified copies of the priority documents have been received in Application No. _____.
 3. Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ . |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date. _____ . | 6) <input type="checkbox"/> Other: _____ . |

DETAILED ACTION

Response to Amendment

Amendment to claims 1 and 17 and cancellation of claim 6 is noted.

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on 08/10/2006 has been entered.

Applicant's arguments with respect to claims 1-5, and 7-17 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5, 7-11, 13-16 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sankey et al (Bitumen Utilization via Partial Upgrading and Emulsification, Proceedings of Fueling for a Clean and Safe Environment, Unitar International Conference on Heavy Crude and Tar Sands, February 12-17, 1995, Houston, Texas, Page 269-276) in view of Tipman et al (US Patent 5,876,592).

Claim 1.

Sankey invention discloses, "In the PPU (Phased Partial Upgrading) concept, bitumen is separated into a lighter overhead fraction and a heavier bottom fraction. The bottom fraction is emulsified to be used as a fuel." (Page 269, column 2, paragraph 3).

The steps involved in splitting bitumen into two fractions are given by Sankey in Figure 1 (Page 270) as follows:

(a) Diluted bitumen is taken to atmospheric distillation followed by vacuum distillation. Sankey also discloses, "Bitumen is pipelined to the refineries after dilution with gas plant condensate." (Page 269, column 2, paragraph 4).

(b) "The heavier residual fraction from the vacuum distillation unit is converted into a 70:30 oil-in-water emulsion for use as a fuel (Page 269, column 2, paragraph 6).

Although Sankey uses atmospheric and vacuum distillation units, it would have been obvious to one skilled in the art at the time the invention was made to modify Sankey invention by replacing atmospheric and vacuum distillation units by two flash separation units to make the process simpler and cheaper.

Also, Sankey discloses bitumen dilution by gas plant condensate, but does not specifically mention about its composition.

Tipman invention teaches bitumen separation by a gas plant diluent and discloses its composition.

Tipman's TABLE 10 shows natural gas condensate consisting of 83% paraffins, 12% naphthenes, and 5% aromatics (Column 11, lines 25-30).

Since, Sankey and Tipman both teach about bitumen separation using gas plant condensate, and whereas Sankey further states that the diluent in the feed adds value to the overhead product from PPU, it would have been obvious to one skilled in the art at the time the invention was made to modify Sankey invention and use a gas plant condensate disclosed in Tipman invention for separating bitumen effectively due to easy availability of the gas plant condensate and for an added value of the overhead product.

Claims 2 and 3.

Sankey invention uses a wide-cut (93-510°C) fraction of the PPU overhead stream (Page 270, last paragraph and page 271, paragraph 1). Obviously, the heavier fraction has boiling point more than 510°C.

Claims 4 and 5.

Tipman discloses, "Most preferably the solvent used is natural gas condensate, a mixture of low molecular weight alkanes with chain lengths from about C₅ to C₁₆, added in sufficient amount to produce a solvent to froth ratio of about 1.0 (w/w) (Column 3, lines 21-32). Tipman shows in TABLE 9 (Columns 9 and 10) using heptane to bitumen ratio from 0.68 to 5.00 (w/w).

Claim 7.

Tipman discloses in TABLE 10 a natural gas condensate consisting of 83% paraffins, 12% naphthenes, and 5% aromatics (Column 11, lines 25-30).

Claim 8.

Sankey does not teach the details of bitumen separation using gas plant diluent.

Tipman invention teaches in Example X (and Figure 5) a run conducted in a scaled up pilot circuit using natural gas condensate as the diluent. (a) The S/F ratio was maintained at about 1.20 (w/w) (Column 12, lines 35-39). (b) The run continued for a period of 7.25 hours (Column 12, lines 60-63). (c) The centrifuge contents separated into 4 layers, specifically: a clean oil layer, a viscous rag layer, a water layer, and a solids layer (Column 13, line 45; column 14, lines 17-18).

Sankey teaches bitumen dilution by gas plant condensate, but does not provide details and Tipman invention does provide the details of bitumen separation using gas plant diluent but does not specifically mention about step (d), the flashing of the remaining diluent, thus, it would have been obvious to one skilled in the art at the time the invention was made to combine Sankey and Tipman inventions and flash the remaining solvent to purify it and recycle in the process to make the bitumen separation more economical.

Claim 9.

Tipman discloses the S/F ratio at about 1.20 (w/w) (Column 12, lines 35-39).

Claims 10 and 11.

Sankey discloses, "The heavier residual fraction from the vacuum distillation unit is converted into a 70:30 oil-in-water emulsion for use as a fuel (Page 269, column 2, paragraph 6).

Claim 13.

Sankey discloses in figure 2 a schematic diagram of the emulsification unit. Accordingly, (a) and (b): heated feed, water, and surfactant are mixed in the 1st stage static mixer, and (c) quench water is added and mixed in the 2nd stage static mixer (see figure 2, page 272). Cold water quench cools and dilutes the emulsion below 100°C (Page 272, column 1, paragraph 2).

Claims 14 and 15.

Sankey discloses that the emulsion has a median droplet size of only 5 µm, (Page 273, column 1, last paragraph).

Claim 16.

Although Sankey invention discloses water content in the emulsion (30%), it does not specifically mention the amount of water added in the quench step separately.

Since water is being added to the process in the emulsion and quench steps sequentially, it would have been obvious to one skilled in the art at the time the

invention was made to modify Sankey invention and add equal amounts of water in the two steps to simplify the process and make it easier for data recording.

Claims 12 and 17 are rejected under 35 U.S.C. 103(a) as being unpatentable over Sankey in view of Tipman and further in view of Wu et al (US Patent 4,119,149).

Claim 12.

Sankey discloses that the heavier residual fraction from the vacuum distillation unit is converted into a 70:30 oil-in-water emulsion for use as a fuel (Page 269, column 2, paragraph 6). Sankey invention also discloses combustion characteristics (Page 273, column 2, paragraph 3) and use of bitumen emulsion as a fuel in a boiler (Page 276, column 1, paragraph 1). But the invention does not specifically mention about using the steam from the boiler for bitumen recovery from an underground reservoir.

Wu discloses the use of injecting steam to produce bitumen and related petroleum hydrocarbons from underground reservoirs (Column 1, lines 16-22).

Thus, it would have been obvious to one skilled in the art at the time the invention was made to combine Sankey, Tipman, and Wu inventions by taking steam generated in the Sankey invention and using it for bitumen recovery as disclosed by Wu invention for an enhanced recovery of the underground bitumen.

Claim 17.

All the limitations of claim 17 are considered under claims 1 and 12. Thus, combined teachings of Sankey, Tipman, and Wu fully disclose claim 17.

Response to Arguments

Flash Separation

The Applicant argues that the flash separation is less exact/precise than the distillation/fractionation process and therefore, the skilled artisan would not be motivated to use flash separation.

The Applicant's argument is not persuasive because one skilled in the art would look for a process which is less precise (and therefore, cheaper) than the fractionation. Since the bitumen is emulsified with water and used as a fuel, its precise separation is not needed.

Gas Plant Diluent Separation

The Applicant argues that gas plant diluent is different than the natural gas condensate of Tipman (Column 11, Table 10).

The Applicant's argument is not persuasive because the claimed composition of the gas plant diluent is: 61-81% paraffins, 15-25% naphthenes, and 5-13% aromatics. Tipman gives natural gas condensate composition as: 83% paraffins, 12% naphthenes, and 5% aromatics (Column 11, line 30). Thus, the slight difference between the two sets

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of compositions are obviously because of two different sources of natural gas. Further, this slight difference is not likely to make any difference in the overall bitumen separation process of Sankey and Tipman as compared to the claimed process.

Sankey

The Applicant provides the background behind the invention and finally again argues that the claimed invention is using flash separation and Sankey is using a more expensive fractionation process.

The Applicant's argument is not persuasive because the fractionation/distillation does contain a flash separation.

Tipman

The Applicant argues that Tipman uses a paraffinic solvent not to separate bitumen but to break water emulsion.

The Applicant's argument is not persuasive because Tipman discloses, " Most preferably the solvent used is natural gas condensate." (Column 3, lines 28-29). "The separation itself can be carried out in the same vessel by stopping the agitation and permitting the water droplets to separate under the influence of gravity." (Column 3, lines 52-55). Obviously, Tipman is separating bitumen.

Wu

The Applicant argues that steam distillation in Wu is on the entire water-bitumen mixture whereas in the present invention only the oil is flashed after the water has been removed and also Wu does not specifically mention treating water to remove contaminants. The Applicant also argues that Wu failed to recognize the opportunity for reducing the fuel cost of a steam-based recovery process.

The Applicant's argument is not persuasive because Wu discloses, "Crude oil and entrained water produced from steam flooding was flashed in a flash drum for production of a liquid oil phase and a vapor phase comprising steam and steam-distilled petroleum vapor." (Column 5, lines 42-48). Although Wu does not specifically mention about treating water, it is well within the art to treat this large quantity of water for reuse and economy. The Applicant's argument on the reduction of fuel cost is not persuasive because Wu uses steam-based recovery process as disclosed in examples 1 and 2 and also in the field test (Column 5, line 22 to column 9, line 2).

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Bose, US Patent 4,331,532.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Prem C. Singh whose telephone number is 571-272-6381. The examiner can normally be reached on MF 6:30 AM-3:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Calderola can be reached on 571-272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

PC/091206



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